

Lab 15 - Gatekeepers

CCNA Voice Lab 15

Gatekeepers

Lab Objective:

The objective of this lab exercise is for you to learn and understand how to implement H.323 gatekeeper functionality in Cisco IOS voice gateways

Topic Description:

Gatekeepers are optional components in an H.323 network. If implemented, gatekeepers may be considered the most important component of the H.323 network and it is mandatory that all endpoints use their services. Endpoints communicate with the gatekeeper via the RAS protocol

Lab Difficulty:

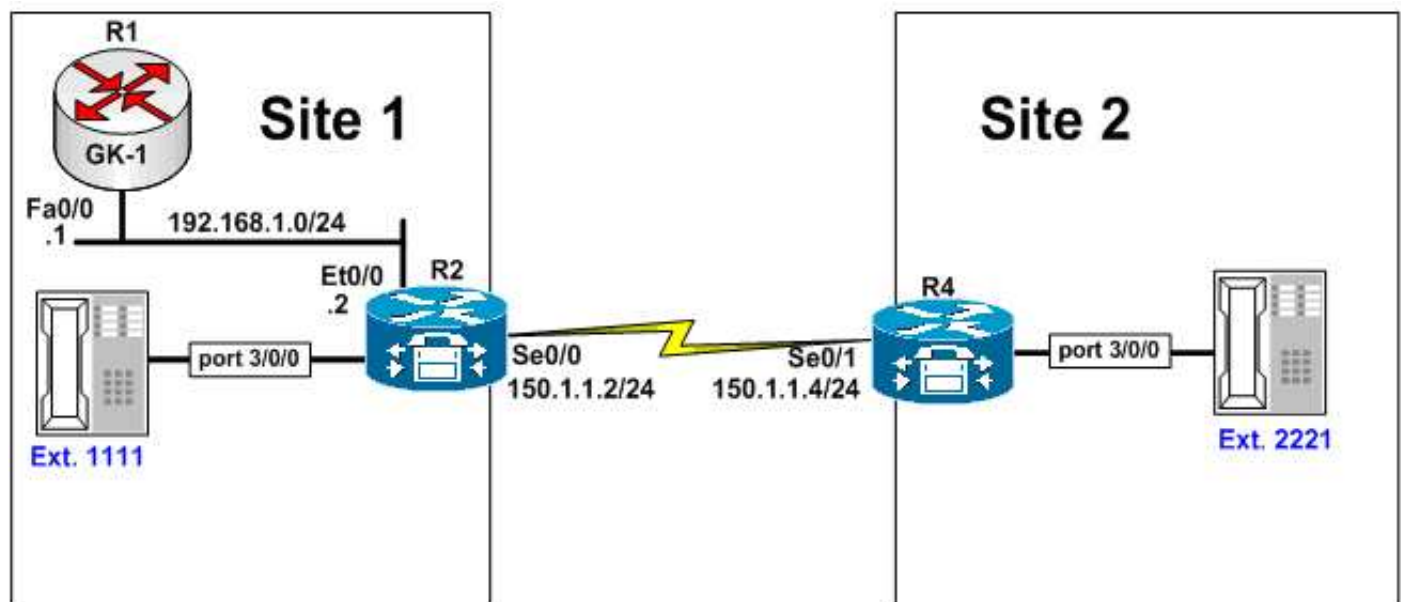
This lab has a difficulty rating of 7/10

Readiness Assessment:

When ready for your exam, you should be able to complete this lab in no more than 10 minutes

Lab Topology:

Please use the following topology to complete this lab exercise:



Lab 15 Configuration Tasks

Task 1:

Configure the hostnames and IP addresses on R2 and R4 as illustrated in the diagram. Configure R4 to provide clocking to R2. Configure the clock rate on R4 as 800Kbps

Task 2:

Configure the LAN connection between R1 and R2 using the IP addresses in the diagram

Task 3:

Configure IP routing between R1, R2 and R3 using an IGP of your choice

Task 4:

Configure POTS dial peers for the connected phones on R2 and R4 as illustrated in the diagram. Also configure a single VoIP dial peer on both R2 and R4. This VoIP dial peer will use the H.323 gatekeeper. Use any dial peer numbers you want

Task 5:

Configure H.323 gatekeeper functionality on R1. Configure two local zones named R2-ZONE and R4-ZONE. R2 will register to the R2-ZONE and R4 will register to the R4-ZONE. Configure the zone prefixes for both of these zones

Task 6:

Configure R2 to register to the gatekeeper. The H.323 ID of R2 should be configured as R2-GW. R1 should register to the gatekeeper using Multicast

Task 7:

Configure R4 to register to the gatekeeper. The H.323 ID of R4 should be configured as R4-GW. R4 should register to the gatekeeper using Unicast

Task 8:

Verify your configuration

Lab 15 Configuration and Verification

Task 1:

```
R2(config)#hostname R2
R2(config)#interface Serial0/0
R2(config-if)#description .Connected To R4 Serial 0/1.
R2(config-if)#ip address 150.1.1.2 255.255.255.0
```

```
R4(config)#hostname R4
R4(config)#interface Serial0/1
R4(config-if)#description .Connected To R2 Serial 0/0
R4(config-if)#ip address 150.1.1.4 255.255.255.0
R4(config-if)#clock rate 800000
```

Verify connectivity by performing a simple ping between the two routers

```
R2#ping 150.1.1.4
```

```
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 150.1.1.4, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 4/4/4 ms
```

```
R4#ping 150.1.1.2
```

```
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 150.1.1.2, timeout is 2 seconds:
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 4/4/8 ms
```

Task 2:

```
R1(config)#int f0/0
R1(config-if)#description .Connected To Switch 1 FastEthernet 0/2.
R1(config-if)#ip address 192.168.1.1 255.255.255.0
R1(config-if)#exit
```

```
R2(config)#int e0/0
R2(config-if)#description .Connected To Switch 1 FastEthernet 0/3.
R2(config-if)#ip address 192.168.1.2 255.255.255.0
R2(config-if)#exit
```

Verify connectivity by performing a simple ping between the two routers

```
R1#ping 192.168.1.2
```

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.1.2, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/4 ms

```
R2#ping 192.168.1.1
```

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 192.168.1.1, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/4 ms

NOTE: If you have a LAN switch between R1 and R2, the switch will need to be configured to allow the LAN interfaces to communicate with each other. This is performed as follows:

```
!
hostname Sw1
!
vlan 12
 name R1_R2_VLAN
!
interface FastEthernet0/2
 description 'Connected To R1 FastEthernet 0/0'
 switchport mode access
 switchport access vlan 12
 no shutdown
!
interface FastEthernet0/3
 description 'Connected To R2 FastEthernet 0/0'
 switchport mode access
 switchport access vlan 12
 no shutdown
```

Task 3:

```
R1(config)#router eigrp 100
R1(config-router)#network 0.0.0.0
R1(config-router)#no auto-summary
R1(config-router)#exit
```

```
R2(config)#router eigrp 100
R2(config-router)#network 0.0.0.0
R2(config-router)#no auto-summary
R2(config-router)#exit
```

```
R4(config)#router eigrp 100
R4(config-router)#network 0.0.0.0
R4(config-router)#no auto-summary
R4(config-router)#exit
```

Task 4:

```
R2(config)#dial-peer voice 1 pots
R2(config-dial-peer)#destination-pattern 1111
R2(config-dial-peer)#port 3/0/0
R2(config-dial-peer)#exit
R2(config)#dial-peer voice 2 voip
R2(config-dial-peer)#destination-pattern .T
```

```
R2(config-dial-peer)#session target ras
R2(config-dial-peer)#exit
```

```
R4(config)#dial-peer voice 1 pots
R4(config-dial-peer)#destination-pattern 2221
R4(config-dial-peer)#port 3/0/0
R4(config-dial-peer)#exit
R4(config)#dial-peer voice 2 voip
R4(config-dial-peer)#destination-pattern .T
R4(config-dial-peer)#session target ras
R4(config-dial-peer)#exit
```

Task 5:

```
R1(config)#gatekeeper
R1(config-gk)#zone local R2-ZONE howtonetwork.net 192.168.1.1
R1(config-gk)#zone local R4-ZONE howtonetwork.net
R1(config-gk)#zone prefix R2-ZONE 1...
R1(config-gk)#zone prefix R4-ZONE 2...
R1(config-gk)#no shutdown
R1(config-gk)#exit
```

Task 6:

```
R2(config)#int e0/0
R2(config-if)#h323-gateway voip interface
R2(config-if)#h323-gateway voip id R2-ZONE multicast
R2(config-if)#h323-gateway voip h323-id R2-GW
R2(config-if)#exit
R2(config)#gateway
R2(config-gateway)#exit
```

Task 7:

```
R4(config)#int s0/1
R4(config-if)#h323-gateway voip interface
R4(config-if)#h323-gateway voip id R4-ZONE ipaddr 192.168.1.1
R4(config-if)#h323-gateway voip h323-id R4-GW
R4(config-if)#exit
R4(config)#gateway
R4(config-gateway)#exit
```

Task 8:

The first validation task is to ensure that H.323 endpoints are registered to the gatekeeper:

```
R1#show gatekeeper endpoints
      GATEKEEPER ENDPOINT REGISTRATION
      =====
CallSignalAddr Port RASSignalAddr Port Zone Name      Type  Flags
-----
150.1.1.4      1720 150.1.1.4      50679 R4-ZONE      VOIP-GW
E164-ID: 2221
H323-ID: R4-GW
Voice Capacity Max.= Avail.= Current.= 0
192.168.1.2    1720 192.168.1.2    61606 R2-ZONE      VOIP-GW
H323-ID: R2-GW
E164-ID: 1111
Voice Capacity Max.= Avail.= Current.= 0
Total number of active registrations = 2
```

Next, verify operation by placing a call between the two extensions:

```
R1#show gatekeeper calls
Total number of active calls = 1.
      GATEKEEPER CALL INFO
      =====
```

LocalCallID	Age(secs)	BW
1-3477	11	16(Kbps)
Endpt(s): Alias	E.164Addr	
src EP: R2-GW	1111	
CallSignalAddr	Port	RASSignalAddr Port
192.168.1.2	1720	192.168.1.2 61606
Endpt(s): Alias	E.164Addr	
dst EP: R4-GW	2221	
CallSignalAddr	Port	RASSignalAddr Port
150.1.1.4	1720	150.1.1.4 50679

The same information can also be validated on the gateways:

R2#show call active voice compact

```
<callID> A/O FAX T<sec> Codec type Peer Address IP R<ip>:<udp>
Total call-legs: 2
  1 ANS T56 g729r8 TELE P1111
  2 ORG T56 g729r8 VOIP P2221 150.1.1.4:19286
```

R4#show call active voice compact

```
<callID> A/O FAX T<sec> Codec type Peer Address IP R<ip>:<udp>
Total call-legs: 2
  1 ANS T87 g729r8 VOIP P1111 150.1.1.2:16680
  2 ORG T87 g729r8 TELE P2221
```

Final Relevant Configuration R1:

R1#show running-config

Building configuration...

```
Current configuration : 1750 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname R1
!
!
!
!
interface FastEthernet0/0
description .Connected To Switch 1 FastEthernet 0/2.
ip address 192.168.1.1 255.255.255.0
duplex auto
speed auto
!
!
!
!
router eigrp 100
network 0.0.0.0
no auto-summary
!
!
!
!
gatekeeper
zone local R2-ZONE howtonetwork.net 192.168.1.1
zone local R4-ZONE howtonetwork.net
zone prefix R2-ZONE 1...
zone prefix R4-ZONE 2...
no shutdown
```

Final Relevant Configuration R2:

R2#**show running-config**

Building configuration...

Current configuration : 1543 bytes

```
!  
version 12.4  
service timestamps debug datetime msec  
service timestamps log datetime msec  
no service password-encryption  
!  
hostname R2  
!  
!  
!  
!  
interface Ethernet0/0  
description .Connected To Switch 1 FastEthernet 0/3.  
ip address 192.168.1.2 255.255.255.0  
full-duplex  
h323-gateway voip interface  
h323-gateway voip id R2-ZONE multicast  
h323-gateway voip h323-id R2-GW  
!  
interface Serial0/0  
description .Connected To R4 Serial 0/1.  
ip address 150.1.1.2 255.255.255.0  
no fair-queue  
!  
!  
router eigrp 100  
network 0.0.0.0  
no auto-summary  
!  
!  
!  
!  
voice-port 3/0/0  
!  
voice-port 3/0/1  
!  
voice-port 3/1/0  
!  
voice-port 3/1/1  
!  
!  
!  
dial-peer voice 1 pots  
destination-pattern 1111  
port 3/0/0  
!  
dial-peer voice 2 voip  
destination-pattern .T  
session target ras  
!  
gateway  
timer receive-rtp 1200
```

Final Relevant Configuration R4:

R4#**show running-config**

Building configuration...

Current configuration : 1572 bytes

```
!  
version 12.4
```

```

version 12.1
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname R4
!
!
!
interface Serial0/1
description .Connected To R2 Serial 0/0
ip address 150.1.1.4 255.255.255.0
clock rate 800000
h323-gateway voip interface
h323-gateway voip id R4-ZONE ipaddr 192.168.1.1 1719
h323-gateway voip h323-id R4-GW
!
router eigrp 100
network 0.0.0.0
no auto-summary
!
!
!
!
voice-port 3/0/0
!
voice-port 3/0/1
!
voice-port 3/1/0
!
voice-port 3/1/1
!
!
!
!
dial-peer voice 1 pots
destination-pattern 2221
port 3/0/0
!
dial-peer voice 2 voip
destination-pattern .T
session target ras
!
gateway
timer receive-rtp 1200

```

